**Skills Worksheet**

**Concept Review**

**MATCHING**

In the space provided, write the letter of the term or phrase that best matches the description.

1. international agreement to limit CFC production  
   ____ a. El Niño  
   b. atmospheric CO₂  
   c. stratospheric ozone  
   d. winter  
   e. Montreal Protocol  
   f. greenhouse effect  
   g. DNA damage  
   h. surface ocean currents  
   i. prevailing winds  
   j. La Niña

2. destroyed by CFCs
   ____

3. caused by wind and influenced by Earth's rotation
   ____

4. increases when fossil fuels are burned
   ____

5. low-angle sunlight
   ____

6. winds push warm water eastward in the Pacific Ocean
   ____

7. heat trapped by atmosphere near Earth's surface
   ____

8. potential result of high UV radiation at Earth's surface
   ____

9. water is cooler than usual in the eastern Pacific Ocean
   ____

10. trade winds, westerlies, and polar easterlies
    ____

**MULTIPLE CHOICE**

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

11. Climate in a region is
    ____ a. the long-term, prevailing atmospheric conditions.  
    b. determined only by seasonal daylight hours.  
    c. the atmospheric conditions on a given day.  
    d. never affected by ocean currents.

12. Rain frequently results whenever
    ____ a. cold, moist air rises.  
    b. warm, moist air rises.  
    c. warm, dry air sinks.  
    d. cold, dry air sinks.
Concept Review continued

13. Latitude strongly influences climate because __________ solar energy falls on areas that are closer to the equator than to the poles.
   a. less
   b. the same amount of
   c. more
   d. sometimes less

14. An important property of air circulation is
   a. warm air is denser than cold air.
   b. cold air and warm air have the same density.
   c. cold air is denser than warm air.
   d. air has no mass.

15. Which of the following gases is most responsible for the greenhouse effect?
   a. nitrous oxide
   b. methane
   c. oxygen
   d. water vapor

16. Which of the following reduce(s) CO₂ in the atmosphere?
   a. phytoplankton
   b. tropical rain forests
   c. oceans
   d. all of the above

17. During the summer, sunlight in the Northern Hemisphere shines
   a. obliquely for long days.
   b. slanting for short days.
   c. more directly for long days.
   d. less directly for short days.

18. Ozone in the stratosphere
   a. causes skin cancer.
   b. prevents DNA repair.
   c. absorbs UV light.
   d. destroys CFCs.

19. Ozone holes appear in polar regions during springtime when ozone-destroying
   a. chlorine atoms are released from polar stratospheric clouds.
   b. chlorine atoms are captured by polar stratospheric clouds.
   c. CFCs are synthesized on polar stratospheric clouds.
   d. CFCs magnify ultraviolet light.

20. Once in the atmosphere, CFCs
   a. quickly become harmless.
   b. destroy ozone for only a short time.
   c. persist but stop destroying ozone.
   d. persist and continue to destroy ozone for decades.

21. La Niña is the __________ phase of the El Niño-Southern Oscillation (ENSO) cycle.
   a. warm
   b. cold
   c. neutral
   d. mixing

22. The average global temperature has __________ during the 20th century.
   a. remained the same
   b. increased every year
   c. risen some years and fallen other years but has increased overall
   d. risen some years and fallen other years but has decreased overall


**Answer Key**

**Concept Review**

**MATCHING**

1. e  
2. c  
3. h  
4. b  
5. d  
6. a  
7. f  
8. g  
9. j  
10. i

**MULTIPLE CHOICE**

11. a  
12. b  
13. c  
14. c  
15. d  
16. d  
17. c  
18. c  
19. a  
20. d  
21. b  
22. c

**Critical Thinking**

**ANALOGIES**

1. b  
2. d  
3. d  
4. a  
5. c  
6. d  
7. c  
8. a

**INTERPRETING OBSERVATIONS**

9. Answers may vary. Sample answer: Snow and ice melt when the temperature rises above freezing. The exposed ground absorbs energy from sunlight faster than ice-covered ground, and therefore warms up more rapidly. Then, more snow and ice melt and more ground is exposed, further increasing the temperature. So areas with snow and ice melt will likely experience a sharper temperature rise than temperate areas.

10. Accept any reasonable answer. Sample answer: Yes; the data so far indicate that the Arctic is already warming faster than the rest of Earth. The more these regions warm, the faster they will continue to warm, and Alaska and other polar regions will show a greater temperature change than temperate and tropical regions.

**AGREE OR DISAGREE**

11. Accept any thoughtful answer. Sample answer: Agree; some countries cut down their rain forests to sell the timber or to clear land to raise cattle. The forests provide a source of income for these countries. But the forests also help reduce carbon dioxide levels for the planet, and industrialized countries produce most of the extra carbon dioxide. Therefore, industrialized nations should help tropical countries develop economic uses for rain forests, such as tourism and medicinal sources.

12. Accept any thoughtful answer. Sample answer: Disagree; the correlation does not really show cause and effect. It shows only that high carbon dioxide levels occur at the same time as warmer temperatures. Perhaps a third factor, such as increased solar energy, caused both.

13. Accept any thoughtful answer. Sample answer: Disagree; developing countries are not producing as much of the greenhouse gases, but they will suffer as much as other countries from the effect of the gases that developed countries produce and use.

**REFINING CONCEPTS**

14. Ocean currents move cold and warm water around the globe. If they stop, then warmer water will stay near the equator, and colder water will stay near the poles. The climate may become colder at high latitudes and warmer near the equator.

15. UV radiation in the stratosphere breaks up CFC molecules, releasing chlorine atoms. The chlorine acts as a catalyst by reacting with and breaking apart ozone molecules. The chlorine atoms are not destroyed when they react with ozone, but instead continue to react with and destroy thousands of other ozone molecules in the stratosphere.